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| 10/727,101 | 12/02/2003 | Jens Barrenscheen | 20658/0203715-US0 | 4396 |

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| EXAMINER |
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BAE, JI H

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| ART UNIT | PAPER NUMBER |
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2115

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 12/28/2006 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/727,101

Applicant(s)

BARRENSCHEEN ET AL.

Examiner

Ji H. Bae

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed..
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>7-9-2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 9 July 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 2, the claim recites that the "program controlled unit inputs the behavior of the diagnostic data output driver of the power chip which outputs the diagnostic data **to the power chip** by transmitting corresponding control data to the power chip." Applicant's claim language contradicts the explicit teaching of the specification. On page 3, paragraph 11 of applicant's specification, applicant discloses that "status information is conveyed by transmitting data, called diagnostic data in the text which follows, **to the microcontroller.**"

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear what features of the invention are being claimed. In lines 15 and following, applicant has used "and/or" language to enumerate features of the claimed invention. For example, applicant claims:

"input the behavior of the output drivers of the power chip **and/or** configure protective mechanisms present in the power chip **and/or**..." [lines 15-18].

Applicant's usage of "and/or" does not properly define the scope of the claims. The use of "and" requires that all of the claimed features be present, while the use of "or" would require that any one of the claimed features be present. As a result, it is unclear whether applicant is claiming all of the features, or any one of the features.

The examiner notes that independent claim 15, which is similar in subject matter to claim 1, uses "at least one of" to describe the presence of the claimed features. For the purposes of examination for prior art, the examiner will assume that claim 1 is meant to be read in a similar fashion, and that any prior art reference which teaches at least one of the claimed features is sufficient to anticipate the claimed limitations.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Clemente, U.S. Patent No. 4,786,826.

Regarding claim 1, Clemente teaches:

An arrangement including a program-controlled unit [Fig. 1, low voltage control IC] and a power chip connected to it [high voltage PIC], wherein

the power chip being additionally connected to electric loads [col. 1, lines 15-17] and driving these electric loads in accordance with timing input to it by means of load control data [col. 3, lines 28-32, variation of duty cycle of power switching device, col. 3, lines 62-63],

the program-controlled unit transmitting to the power chip the above mentioned load control data and control data controlling the power chip [see rejection of previous limitation], and

the power chip transmitting to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented [status lines and temperature, col. 3, lines 50-63], and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can configure protective mechanisms present in the power chip [reduce the duty cycle of the power switching device in response to temperature rise, col. 3, lines 50-63].

Regarding claim 15, Clemente teaches the arrangement of claim 1. Clemente also teaches the system exhibiting the arrangement of claim 1, and comprising means to implement the claimed features.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admission of prior art [AAPA] over Chengson et al., U.S. Patent No. 5,811,997.

Regarding claim 2, AAPA teaches the arrangement of claim 1, specifically a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit transmitting to the power chip the above mentioned load control data and control data controlling the power chip, and

the power chip transmitting to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can input the behavior of the output drivers of the power chip and/or configure protective mechanisms present in the power chip and/or input [applicant's specification, "Background of the Invention", paragraphs 2-6].

AAPA does not explicitly teach whether the diagnostic data output drivers operate in accordance with push/pull or open drain based on transmission of corresponding control data to the power chip.

Chengson teaches a system for selectively enabling either a push/pull mode or open drain mode in an output driver of an integrated circuit [col. 2, lines 58-64] based on the transmission of control data [mode bits, col. 3, lines 2-4].

It would have been obvious to one of ordinary skill in the art to combine the teachings of AAPA with Chengson by modifying AAPA to selectively enable a push/pull mode or open drain

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mode for the diagnostic data output drivers based on control data, as taught by Chengson. Chengson teaches that prior art solutions did not adequately address the need for output drivers to be used in a variety of situations. The teachings of Chengson would improve the system of AAPA by providing an output driver circuit that is configurable for a variety of applications [col. 2, lines 37-47].

Regarding claim 5, AAPA teaches the controlling of the behavior of the load control data output drivers of the power chip by transmitting control data to the power chip from the program-controlled unit [specification, paragraphs 4, 5].

Regarding claim 6, AAPA teaches controlling the timing of processes running in the load control data output drivers by transmitting control data to the power chip from the program-controlled unit [specification, paragraph 10].

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA/Chengson as applied to claim 2 above, and further in view of Risinger, U.S. Patent No. 5,537,070.

Regarding claim 4, AAPA/Chengson teaches the arrangement of claim 2, but does not teach controlling how steep the edges of the signals output by the diagnostic data output drivers should be based on control data transmitted to the power chip from the program-controlled unit.

Risinger teaches an output driver circuit with slew rate control. The output driver circuit is configured to control the steepness of the edges of the signals output by the driver [Fig. 4, col. 5, line 52 to col. 6, line 5].

It would have been obvious to one of ordinary skill in the art to combine Risinger with AAPA/Chengson by further modifying the transmitted control data [mode bits] to specify slew rate control of the output driver, using the circuitry taught by Risinger. Chengson teaches an output driver circuit capable of selectively enabling either a push/pull mode or open drain mode,

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while Risinger teaches that the output driver is an open drain transistor [abstract]. The teachings of Risinger would improve the open drain output driver of AAPA/Chengson by reducing the propagation delay through the driver [col. 2, lines 56-61], as well as noise and switching transients [col. 6, lines 2-5].

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Boggs et al., U.S. Patent No. 6,317,458 B1¹.

Regarding claim 9, AAPA teaches the arrangement of claim 1, but does not teach the transmitting of control data to the power chip to specify what states or events have to be considered as abnormal states or events.

Boggs teaches a system for an output driver that is capable of detecting for various electrical faults in the load being driven [col. 1, lines 43-55, col. 4, lines 45-50]. In particular, Boggs teaches that a current range for a short circuit trip point is a function of a selected programmable current range [col. 4, lines 56-61].

It would have been obvious to one of ordinary skill in the art to combine Boggs with AAPA by modifying the program-controlled unit of AAPA to specify control data to program a current range for detecting a short circuit, as taught by Boggs. Boggs and AAPA are both directed towards output drivers that are capable of detecting operating conditions in a load driven by the an output driver. AAPA teaches that overcurrent and excessive temperatures are two conditions that may be monitored for. The teachings of Boggs would improve AAPA by allowing AAPA to also determine short circuit or open circuit conditions [col. 4, lines 45-47].

Regarding claim 10, Boggs teaches that the abnormal conditions take into consideration the behavior of the loads.

¹ Applicant-cited reference

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Guerra, European Patent Application Publication No. 418,665 A1².

Regarding claim 13, AAPA teaches the arrangement of claim 1, but does not teach outputting diagnostic data following a request by the program-controlled unit.

Guerra teaches a computer that controls a power supply circuit, and is capable of determining faults in the load being driven by the circuit. Guerra further teaches that the computer is capable of interrogating the circuit in order to determine the fault [pp. 4, lines 35-42].

It would have been obvious to one of ordinary skill in the art to combine the teachings of AAPA with Guerra by modifying the program-controlled unit of AAPA [computer in Guerra] to interrogate the power chip [power supply circuit in Guerra] for fault conditions, as taught by Guerra. Both AAPA and Guerra teach processor controlled power supply system capable of detecting faults in a load driven by the power supply system. AAPA teaches that overcurrent and excessive temperatures are two conditions that may be monitored for. The teachings of Guerra would improve AAPA by allowing AAPA to also determine short circuit or open circuit conditions [pp. 4, lines 51-55].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Bennett et al., U.S. Patent No. 5,760,563.

² Applicant-cited reference

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji H. Bae whose telephone number is 571-272-7181. The examiner can normally be reached on Monday-Friday, 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on 571-272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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